PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

(PCT Rule 66)

Date of mailing *(day/month/year)*	30-09-2004
Applicant's or agent's file reference: 51242 WO	**REPLY DUE** within 60 days from the above date of mailing: TH04: 28M04
International application No.: PCT/IB 2002/004990	International filing date *(day/month/year)*: 28-11-2002
Priority date *(day/month/year)*: ---	
International Patent Classification (IPC) or both national classification and IPC: G06K9/00	
Applicant: NOKIA CORPORATION ET AL	

1. ☐ The written opinion established by the International Searching Authority:
   ☐ is ☐ is not
   considered to be a written opinion of the International Preliminary Examining Authority.

2. This first (first, etc.) opinion contains indications relating to the following items:
   - ☒ Box No. I Basis of the opinion
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

3. The applicant is hereby **invited to reply** to this opinion.

   When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(e).

   How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

   Also For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4*bis*. For an informal communication with the examiner, see Rule 66.6. For an additional opportunity to submit amendments, see Rule 66.4.

   If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary report on patentability (Chapter II of the PCT) must be established according to Rule 69.2 is: 28-03-2005

Name and mailing address of the IPEA/SE	Authorized officer
Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 46 8 667 72 88	Alexander Lakic /LR Telephone No. 46 8 782 25 00

WRITTEN OPINION OF THE INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

International application No.
PCT/IB 2002/004990

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this opinion has been established on the basis of *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed.")*:

☒ the international application as originally filed/furnished

☐ the description:

pages _____ as originally filed/furnished
pages _____ received by this Authority on _____
pages _____ received by this Authority on _____

☐ the claims:

pages _____ as originally filed/furnished
pages _____ as amended (together with any statement) under Article 19
pages _____ received by this Authority on _____
pages _____ received by this Authority on _____

☐ the drawings:

pages _____ as originally filed/furnished
pages _____ received by this Authority on _____
pages _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

WRITTEN OPINION OF THE
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

International application No.
PCT/IB 2002/004990

Box No. V **Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1,2,4,12,13,15,16
	Claims	
Inventive step (IS)	Claims	1-17
	Claims	
Industrial applicability (IA)	Claims	
	Claims	

2. Citations and explanations:

Relevant documents cited in the International Search Report:

D1: CHENG YANG: "MACS: Music Audio Characteristics Sequence Indexing for Similarity Retrieval". In IEEE Workshop on Applications of Signal Processing to Audio and Acoustics. 2001. 21-24 Oct. New York.
D2: US 5402339 A

D1 discloses a method for matching audio data. Audio data is firstly converted into a string of elements. In order to compare two strings, the method comprises indexing means in order to capture the relative order of the elements included in the string. A matching procedure is then performed; each match contains a tuple (query-offset, matching-offset). A "good" match occurs when the relative order of the elements in the query string and the reference string agrees.

D2 discloses an apparatus for retrieving musical information. A music piece is converted to a string of elements, where each element represents note data. The apparatus also include means for producing position data representing positions at which note data is positioned in the musical information. The apparatus also include means for indexing the musical information by storing an index which indicates the relationship between note data items and position data. The relative order of the note data is considered when matching strings of musical information.

The applied invention is a method, software tool, computer program product, computer data signal and electronic device for determining and outputting a similarity measure between two

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

data strings. The similarity measure is based on the number of identical elements in both strings and the relative position of the elements in the strings.

Referring to claims 1, 12, 13, 15, 16:

Claim 1 refers to a method for determining and outputting a similarity measure between two data strings. Relative positions of the elements in the strings are firstly determined. A matching measure is then determined based on how far the relative positions of elements in the second string match with the relative position of elements in the first string.

D1 discloses a method where the relative positions, in two strings representing musical pieces, are considered in order to measure similarity (see sections 2.3, 2.4 and figure 5). The relative position of matching elements plays a crucial role in the similarity measure, see for example figure 5, where two similarity measures gives 10 matches each, but the top one is considered to be a better match because the relative order of elements in string s is almost persevered in string r.

D2 also discloses an invention where the relative position of elements in a string is considered when determining similarity between two strings. The relative position is given by an index which indicates relationships between elements in the string and their position (see for example claim 1).

In view of the aforementioned, both D1 and D2 disclose inventions where the relative position of elements is used as a similarity criteria when matching two strings. Therefore, the invention according to claim 1 lacks novelty.

The argumentation regarding claim 1 is also valid for claims 12, 13, 15 and 16. Therefore, the invention according to claims 12, 13, 15 and 16 lacks novelty.

Referring to claims 2-11, 14:

The invention according to claim 2 lacks novelty, because it is known from D2 that pairs of consecutively following data is

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

determined in a string (see figure 10).

The invention according claim 4 lacks novelty, because it is known from D2 that a position number and an index (corresponds to the "numbering" given in claim4) is given to the elements in a string (see for example column 8, row 4-17).

The other dependent claims 3,5,6-11,14 are not considered involving an inventive step. Because they only disclose obvious and, in the art of information retrieval, well known measures, such as, determining a threshold value when measuring similarity between two strings and suppressing elements in a reference string which are not present in the query string.